

MARPOSS Case Study

AEROSPACE COMPANY TRUSTS IN ARTIS MACHINE PROTECTION FOR ITS HUGE WFL MILLTURN MACHINES

PROBLEM

The maintenance division reported a high frequency of collision in multi-task machines that produces components for landing gear systems. Big problems caused by these collisions during the cutting operation or manual axis movements. The most significant damages are as follows:

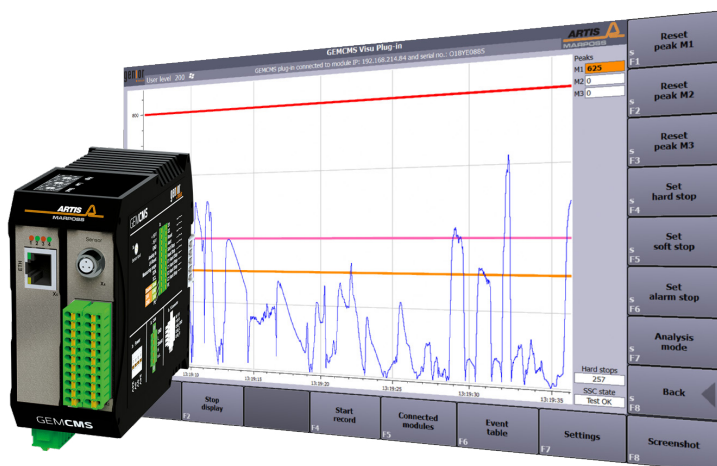
- ✓ Workpiece scrap (very expensive)
- ✓ Milling spindle bearings
- ✓ Axis bearings
- ✓ Clamping elements
- ✓ Tool damage
- ✓ Machine precision out of tolerance

This results in unplanned costs and service and maintenance interventions. Depending on the extent of the collision, the machine can be down for several days.

APPLICATION

The manufacturer of aircraft landing gear components operates several machine tools. The most expensive and important machines are the WFL ones. Here collisions between the milling spindle and the workpiece occur quite often. The machining time is very long and operators are mostly not constant at the machine. A reliable protection is not available in the machine tools.

Therefore, the customer has decided to retrofit all 4 expensive WFL MILLTURN machines with Artis collision monitoring systems as a priority. For other types of machines, the budget for Artis machine protection will be determined by the customer soon.



SOLUTION

The customer wanted maximum safety for stopping the machine axes to prevent or minimize consequential damage. The decision was made in favor of Artis collision monitoring because the modern, safe technology can detect and report both - dynamic and quasi-static collisions. The Artis GEMCMS system offers this monitoring range. Many competitor systems can detect dynamic collisions only. In this case slow axis movements cannot be detected reliably.

SCOPE OF THE ARTIS GEMCMS MODULAR SYSTEM

1x DA-Force Sensor: located in the machine structure close to the milling spindle

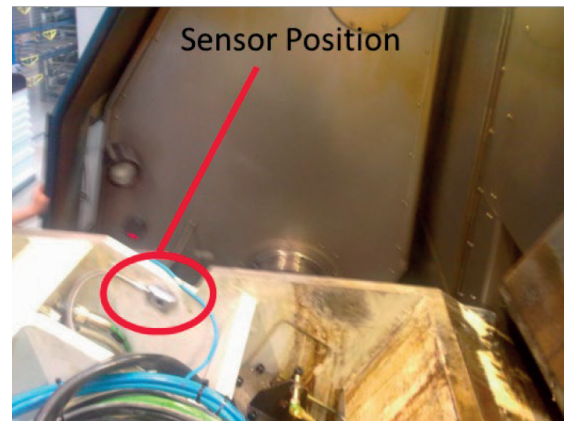
1x GEMCMS module: placed in the electrical cabinet

1x IPC4: mounted on the machine control housing

The Integration has been performed by I/O signals.

The DA surface strain sensor detects changes in the surface tension.

In case of an over-limit value, the system set an alarm output signal within 1ms. Dedicated axis of the WFL machine can be stopped rapidly.



BENEFITS

Avoidance or significantly minimizing consequential damages and losses due to possible rapid stop of machine tool axis – caused by dynamic or quasi-static collisions.

Savings are:

- ✓ Less costs of scrap
- ✓ Less costs of lost production time (down-time)
- ✓ Less cost of damaged machine parts
- ✓ Less cost of tool damages
- ✓ Less costs of customer claims due to late delivery time

By using GEMCMS the production management can...

- operate their machines 24/7 because of a emergency stop after a collision
- analyze all events recorded in a black box in order to prevent similar situations
- connect the module to the local network for remote control

MARKET

The system can be used for protection in different machines and systems in different industrial markets. Therefore it is suitable for:

- New machines: machine manufacturers (OEMs)
- Existing machines: retrofits at end-users
- Industry 4.0 customer projects

To find out more about our GEMCMS system please visit the website:

<https://www.marposs.com/eng/product/machine-protection-for-machine-tools-robotic-and-handling-systems>